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EXAMINER

TSOY, ELENA

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 08/21/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/781,475

Applicant(s)

ANTHONY ET AL.

Examiner

Elena Tsoy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-56 is/are pending in the application.
- 4a) Of the above claim(s) 56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-42 and 45-55 is/are rejected.
- 7) ☒ Claim(s) 43, 44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- ☐ Interview Summary (PTO-413) Paper No(s) _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 29-55, drawn to process for the preparation of particles, classified in class 427, subclass 212.
 - II. Claim 56, drawn to a composition, classified in class 51, subclass 307; 106/499; 428/407 and 423/242.2.

Distinctness

The inventions are distinct, each from the other because:

2. Inventions I and II are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the particles of invention I (intermediate product) is deemed to be useful for forming wear resistant coating.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation between Examiner Kolsow and Mr. Seugnet on August 4, 2003 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-55. Affirmation of this election must be made by applicant in replying to this Office action. Claim 56 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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5. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Claim Objections

6. Claims 41, 45-48 are objected to because of the following informalities:

Claim 41 does not recite a compound which weight-average molecular mass is from 2000. Appropriate correction is required. For examining purposes the compound was interpreted as a comb copolymer.

Claim 45, line 1, a phrase "according to either of claim 43" seems to be incorrect. Appropriate correction is required. For examining purposes the phrase was interpreted as "according to claim 29".

Claim 46, line 1, a phrase "according to the preceding claim" should recite a claim number. For examining purposes the phrase was interpreted as "according to claim 45".

Claim 47, line 2, a phrase "or the complexing anionic side chains" seems to be incorrect since claim 47 depend on claim 42 which does not recite complexing anionic side chains.

Claim 48, lines 1-2, a phrase "A process according to one of claim 47, wherein the copolymer is combined" seems to be incorrect since claim 47 does not recite a copolymer.

For examining purposes the phrase was interpreted as "A process according to claim 29, wherein the copolymer is combined".

Claim 47, lines 1-2, a phrase "the monomers ... is combined" seems to be incorrect. It is suggested to change it to "the monomers ... are combined".

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. **Claims 29-41, 50-55** are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. Gerardin et al (US 6,500,871) in view of Anderson et al (US 6,413,590).

Gerardin et al disclose a process of claimed invention except that a copolymer is not a comb copolymer but a block copolymer comprising complexing anionic blocks and stabilizing nonionic blocks.

Anderson et al teach that a copolymer is functionally equivalent to a graft copolymer or to a mixture of homopolymers (See column 2, lines 24-30). In other words, properties of polymer composition depend basically on polymer units themselves, not on how they are combined, i.e. not on structure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a copolymer of any structure in a process of Gerardin et al including a comb (graft) copolymer structure as long as the copolymer comprises in a backbone and side chains a combination of the complexing anionic and stabilizing nonionic units with the

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expectation of providing the desired benefits since Anderson et al teach that properties of polymer composition depend basically on polymer units themselves, not on how they are combined, i.e. not on structure.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 29-42, 47, 50-52** are rejected under 35 U.S.C. 103(a) as being unpatentable over Raghavan et al (US 5,133,955) in view of December (US 6,376,616).

As to claims 30-33, 35-37, 51, Raghavan et al disclose a process for the preparation of particles comprising a metal ion which comprises the following stages: a) a metal salt such as ferric chloride (a precursor) comprising iron cation is dissolved in an aqueous medium (See column 2, lines 56-57); c) the solution resulting from stage a) is brought into a contact with a water-soluble amphiphatic surfactant having the proper hydrophilic-lipophilic balance; d) a partial or complete hydrolysis of the product obtained during stage c) is carried out by adding ammonium hydroxide (See column 2, line 34) forming ultrafine microcolloidal particles of iron (hydrous) oxide (See column 1, lines 13-14, 25-32, 58-66; column 2, lines 1-65). The particles form a very stable dispersion, which does not settle for many hours. The stability of the suspension of the particles may be attributed to the microcolloidal size of the particles and the

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possible adsorption of the surfactant molecules onto the surface of the particles. See column 3, lines 24-53.

As to claims 29, 42, 47, 50, Raghavan et al fail to teach that the dispersing surfactant comprises either a complexing anionic backbone and stabilizing hydrophilic side chains or a stabilizing hydrophilic neutral backbone and complexing anionic side chains or at least one of the two abovementioned copolymers in combination with at least one complexing anionic hydrophilic polymer (Claim 29), and used in a ratio 0.05-2 (Claim 50); the anionic backbone is obtained from monomers chosen from unsaturated monocarboxylic acids (Claim 42) combined with esters of unsaturated carboxylic acids (Claim 47).

December teaches that a compound having an acrylic backbone with a plurality of anionic groups such as a methacrylamide/methacrylate copolymer (See column 4, lines 46-49, 54-55; column 5, lines 5-17) and a stabilizing (hydrophilic neutral) substituent (comb structure) such as an alkoxy-terminated polyalkylene oxide structure (See column 2, lines 56-66) is suitable for providing exceptionally stable dispersions of pigment particles (See column 3, lines 22-27) when used in ratio 0.2 to 0.1 (See column 8, lines 52-55), pigments being fine particles of iron oxide pigments, titanium dioxide pigments, etc. (See column 7, lines 62-66) having preferably maximum particle size between 100 nm and less than 6000 nm (See column 8, lines 65-67).

It is held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior

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to the invention was held to be obvious); *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a polymeric compound having an acrylic backbone with a plurality of anionic groups and a stabilizing (hydrophilic neutral) substituent such as an alkoxy-terminated polyalkylene oxide structure as dispersing surfactant in a process of Raghavan et al in ratio 0.2 to 0.1 since December teaches that said polymeric compound is suitable for providing exceptionally stable dispersions of fine iron oxide pigments, titanium dioxide particles when used in ratio 0.2 to 0.1.

As to claim 34, ultrafine microcolloidal particles of Raghavan et al in view of December would have particle size of less than 100 nm because Raghavan et al teach that iron hydrous oxide particles have diameter of 40 nm (See column 2, lines 39-43), and a monomolecular layer of a dispersant would not exceed 60 nm.

As to claim 38-41, 52, Raghavan et al in view of December fail to teach that ammonia is used in an amount corresponding to 50-130 % of a stoichiometric amount needed to completely hydrolyze the precursor (Claim 38); the sum of n_1 and n_2 , then n_1 and n_2 conform to the following inequalities $0 < n_1 \leq 0.8n$ and $0.2n \leq n_2 < n$ (Claim 39); the water-soluble comb copolymer forms a transparent solution at 10% by weight in water at the lowest temperature to which said comb copolymer, optionally combined with the hydrophilic polymer, is subjected in the process (Claim 40); the weight-average molecular mass (M_w) of comb copolymer is between 2000 and $5 \times 10^{5.5}$ g/mol, preferably between 3000 and $10^{5.5}$ g/mol (Claim 41); after

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stage d), a stage e) of maturing is carried out at a temperature of between 10⁰C. and a temperature of less than or equal to the boiling point of said dispersion (Claim 52).

It is held that that the selection of reaction parameters such as temperature and concentration would have been obvious. The molecular mass of comb copolymer is a result-effective parameter because it affects properties of the copolymer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values of the relevant parameters (including those of claims 38-41, 52) in a process of Raghavan et al in view of December through routine experimentation in the absence of a showing of criticality.

11. **Claims 45, 46, 48, 49** are rejected under 35 U.S.C. 103(a) as being unpatentable over Raghavan et al (US 5,133,955) in view of December (US 6,376,616), as applied above, and further in view of Anderson et al (US 6,413,590).

Raghavan et al in view of December fail to teach that the copolymer comprises a stabilizing hydrophilic neutral backbone and complexing anionic hydrophilic side chains, said neutral backbone being obtained from ethylene oxide in the form of an oligomer or of a polymer (Claim 45); the side chains are obtained from monomers chosen from unsaturated carboxylic acids, polycarboxylic acids or their anhydride form, unsaturated amino acids or unsaturated sulfonic acids such as methacrylamide/methacrylate copolymer (Claim 46); the copolymer is combined with at least one polymer obtained by polymerization of at least one anionic monomer chosen from unsaturated carboxylic acids, polycarboxylic acids or their anhydride form, or unsaturated sulfonic acids (Claim 48) of 2000 and 5×10^5 g/mol (Claim 49).

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Anderson et al teach that a copolymer is functionally equivalent to a graft copolymer or to a mixture of homopolymers (See column 2, lines 24-30). In other words, properties of polymer composition depend basically on polymer units themselves, not on how they are combined, i.e. not on structure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a copolymer of any structure including a comb (graft) copolymer structure or a mixture of a copolymer with other polymer for making a backbone and side chains in a process of Raghavan et al in view of December as long as the copolymer or polymer in the a mixture comprises complexing anionic units and stabilizing nonionic units whether in the backbone or the side chains with the expectation of providing the desired benefits since Anderson et al teach that properties of polymer composition depend basically on polymer units themselves, not on how they are combined, i.e. not on structure.

Claim 49 would have been obvious for the same reasons as set for claim 41.

12. **Claims 53-55** are rejected under 35 U.S.C. 103(a) as being unpatentable over Raghavan et al (US 5,133,955) in view of December (US 6,376,616), as applied above, and further in view of GB 1055934.

Raghavan et al further teach that the iron oxide particles may be removed by any of a number of well-known methods (See column 3, lines 51-54). However, Raghavan et al/in view of December fail to teach that after stage d) or after stage e), a stage f) a concentration of the dispersion is carried out (Claim 53); the concentration is carried out by partially or completely separating the particles from the medium of the dispersion and then optionally by redispersing the particles thus obtained in an appropriate amount of aqueous medium (Claim 54); the

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separation stage can be carried out is by ultrafiltration, dialysis, precipitation, centrifugation or ultracentrifugation, by complete or partial evaporation, with or without heating, of the aqueous medium of the dispersion, or by lyophilization, it being possible for these stages to be carried out alone or in combination (Claim 55).

GB 1055934 teaches that colloidal droplets encapsulated with a dispersing agent (See page 2, lines 89-105) can be concentrated without coagulation by drying or distillation (See page 3, lines 25-107) to form a stable dry material comprising particles coated with the dispersing agent (See page 1, lines 55-59) which will not coagulate upon redispersion (See page 2, lines 99-102).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have separated or concentrated particles of Raghavan et al in view of December by drying or distillation with the expectation of providing the desired particles coated with the dispersing agent which will not coagulate upon redispersion, as taught by GB 1055934.

Allowable Subject Matter

13. Claims 43, 44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: claim 43 is allowed because the prior art of the record does not teach or suggest side chains obtained from recited macromonomers. Closest prior art of December teaches polyoxyalkylene containing side chains.

Claim 44 is allowed as further limiting allowed claim 43.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (703) 605-1171. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Elena Tsoy
Examiner
Art Unit 1762

August 11, 2003